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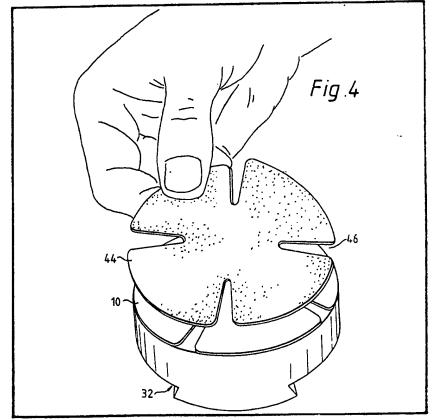
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UK Patent Application (19) GB (11) 2 039 810 A

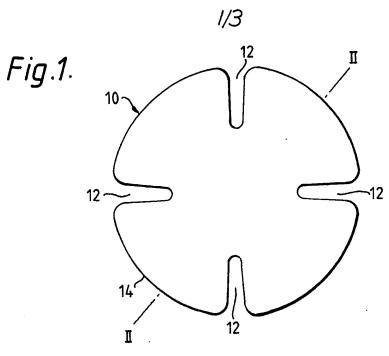
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- (72) Inventor Stephen Jack Wylde
- (74) Agent Bromhead & Co.

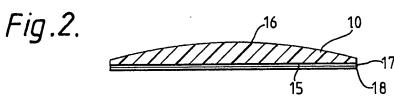
(54) A Tool Interfacing Pad

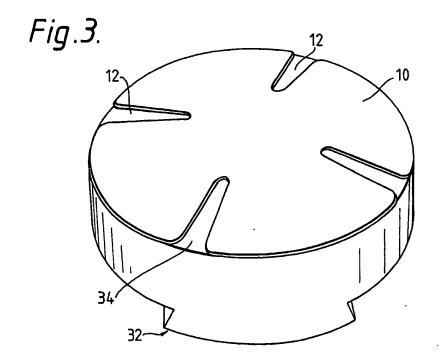
(57) An interfacing pad (10) for application to the working surface of a tool 32 for grinding, lapping or polishing optical lenses has a thickness which varies between its centre and its periphery, so that it adjusts the effective curvature of the tool when applied thereto. A grinding, polishing or lapping pad 44 is thereafter applied to the interfacing pad. Slots assist the pads in conforming to the curvature of the tool.

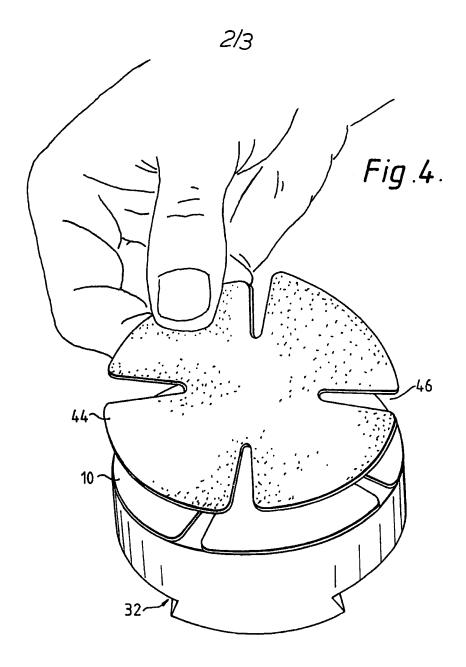


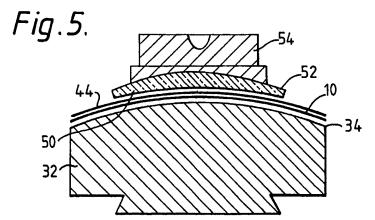
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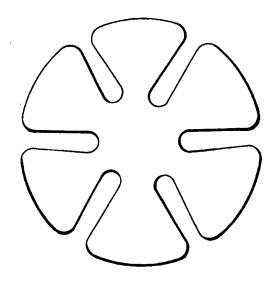


Fig.6.

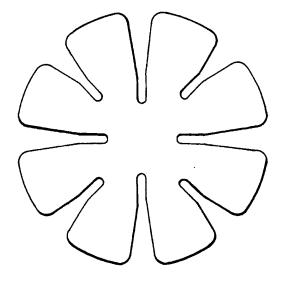


Fig .7.

SPECIFICATION A Tool Interfacing Pad

This invention relates to a tool interfacing pad which, when attached to the working surface of a tool for grinding, lapping or polishing optical lenses, adjusts the effective curvature of the tool.

Optical lenses are generally ground, lapped or polished by means of a tool having a carefully machined surface which conforms to that desired on one face of an optical lens. Sometimes the same tool has two such surfaces—one for shaping one side of the lens and the other for producing an approximate surface on the lens and the other for producing an accurate surface on the lens. Usually the working surface or surfaces on these tools are of convex or concave shape.

In order to reduce the rate of wear on the said working surfaces of these tools, it is usual to apply to them an adhesive-backed replaceable pad or foil which is sufficiently thin to be brought into conformity with the convex or concave working surface of the tool. Various forms of pad have been proposed in the past, including aluminium pads, steel pads and pads made of perforated metal so that slurry can be retained in the perforations.

Hitherto, the curvature of the lens surface which can be ground, lapped or polished by the tool has been determined almost entirely by the 30 working surface of the tool (the thickness of the pad or foil attached to the working surface affecting this curvature only slightly).

The present invention constitutes a departure from this practice in that an interfacing pad is applied to the working surface of the tool for the purpose of adjusting the curvature of the lens surface which can be ground, lapped or polished by the tool.

According to the present invention, an
Interfacing pad for application to the working
surface of a tool for grinding, lapping or polishing
optical lenses has a thickness which varies
between its centre and its periphery, so that it
adjusts the effective curvature of the tool when
applied thereto.

Preferably, the pad, prior to attachment, is flat on one side and curved on the other. For example, the curved surface could have a raised centre, with a radius of 4,184 m/meters. An adhesive backing may be applied to the flat side for fixing the pad to the tool.

The pad may be made out of a tough but flexible synthetic plastics material such as toughened Polystyrene.

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In order that an intended lower surface of the interfacing pad may conform precisely to the convex or concave working surface of a tool, the pad will generally have slots cut in from its peripheral edge, which are open at the peripheral edge, in accordance with established practice in the lens grinding and polishing industry.

The invention also extends to an assembly comprising a grinding, lapping or polishing tool having an interfacing pad the thickness of which

65 varies as described earlier, there being a lapping foil or polishing pad laid on and conforming to the upper surface of the interfacing pad.

Examples of a tool interfacing pad in accordance with the present invention as well as illustrations of the way in which it is used are shown in the accompanying drawings, in which:

Figure 1 is a plan view of an interfacing pad;
Figure 2 is a cross-section along the line II—II
of Figure 1, with a greatly exaggerated thickness
75 for the sake of clarity;

Figure 3 is a perspective view of an optical tool having an interfacing pad of the form shown in Figures 1 and 2 adhered to its convex working surface;

80 Figure 4 is a perspective view of an optical tool as shown in Figure 3 and a lapping pad or polishing foil being attached on top of the interfacing pad;

Figure 5 is a cross-sectional view of an optical tool prepared as shown in Figure 4 and a lens and lens holding assembly, ready for work on the lens, and

Figures 6 and 7 are plan views of modified forms of the interfacing pad.

90 The tool interfacing pad 10 shown in Figure 1 is made of flexible toughened Polystyrene, is generally circular and has four radial slots 1.2 which extend inwardly from the periphery 14 of the pad, are open at the periphery 14, and are spaced uniformly around it. These slots are commonly found in lens grinding, lapping and polishing pads, and ease the fixing of an intended lower surface of the pad into close conformity with the working surface of the optical tool.

100 As can be seen from Figure 2, before the pad is attached to an optical tool, it has a flat underneath surface 15 on which is provided an adhesive backing 17 protected by a peelable paper cover 18. The upper surface 16 of the pad 105 is convex, so that it has a raised centre and a radius of curvature of 4,184 m/meters.

In Figure 3, an optical tool 32 has an interfacing pad 10 like the one illustrated in Figures 1 and 2 attached to its convex working 110 face 34. The protective paper cover 18 shown in Figure 2 has been peeled off and the pad has been pressed against the tool to create a bond between the lower surface 15 of the pad and the convex surface 34 of the tool by virtue of the 115 adhesive layer 17.

Whilst the optical tool has been shown with a convex working surface, it is to be understood that the surface could equally well be concave, for grinding, lapping or polishing a convex surface on an optical lens.

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The effective curvature of the tool shown in Figure 3 is thus determined by the convex working surface 34 itself together with the correction due to the convexity of the interfacing pad 10, plus an allowance for the thickness of the pad which in this case is about 1/8 dioptre. The power of a lens ground by the tool 32 would therefore be altered by the interfacing pad 10.

Figure 4 shows a soft polishing pad 44 being

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placed by hand onto the top of the interfacing pad 10 fixed to the optical tool 32. The polishing pad is bonded to the interfacing pad in the same way as the interfacing pad is bonded to the tool. The polishing pad is also formed with slots 46 to assist in the operation, and care is taken to ensure that the slots of the pad 44 are displaced from those of pad 10, to improve the support given to the polishing pad along the edges of the slots 46.

Figure 5 shows an assembly ready for polishing, the polishing 44 having been bonded to the interfacing pad 10.

An optical lens 52 mounted on a lens-holding block 54 is held with its concave surface 50 in contact with the convex upper surface of the polishing pad 44, ready for the polishing operation. The relative movement between the tool and the block to accomplish this is usually complex, but the means which effect this movement are well known in the optical industry and are not described here in detail.

Although Figures 4 and 5 show the use of a soft polishing pad 44, this could equally well be a grinding or a lapping pad.

25 Figure 6 is a plan view of a modified form of tool interfacing pad in accordance with the present invention. This example has six radial slots.

The further modified form illustrated in Figure
7 has eight radial slots. Alternate slots extend
further towards the centre of the pad, and each
slot has an inner part with parallel sides or sides
converging in a direction away from the centre of
the pad towards the open end of the slot, and an
outer part with straight sides diverging in that
direction. The pad may have a diameter of 75

The interfacing pads shown have smooth, accurate surfaces. Their thicknesses are in the range from 0.20 m/m to 0.60 m/m and their diameters from 50 mm to 150 mm. The sag. of the radius face would range from 0.10 mm to 0.4 mm which equals a radius range from 2 meters to 8 meters. Many materials as an alternative to toughened Polystyrene may be used, particularly a polythene manufactured by I.C.I. and described as Alkathene Polymer WRM 19. The number of slots in the illustrated examples is four, six and eight, but any number from four to eight is acceptable.

Although the illustrated interfacing pads have convex upper surfaces, it would be possible for the upper face of a pad to be concave so that the pad would reduce the effective power of an optical tool with a convex working surface.

Claims

 An interfacing pad for application to the working surface of a tool for grinding, lapping or

- polishing optical lenses, with a thickness which 60 varies between its centre and its periphery, so that it adjusts the effective curvature of the tool when applied thereto.
 - 2. A pad according to claim 1, one main face of which is flat and the other of which is curved.
 - 3. A pad according to claim 1 or claim 2, one main face of which is concave.

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- 4. A pad according to claim 1 or claim 2, one main face of which is convex.
- A pad according to any preceding claim,
 made from a tough but flexible synthetic plastics material such as toughened Polystyrene.
- 6. A pad according to any preceding claim, having radial slots cut in from its peripheral edge which are open at the peripheral edge, to allow
 75 the pad to conform more easily to a convex or concave working surface of a tool.
 - 7. A pad according to claim 6, in which there are four such slots spaced around the periphery of the pad.
- 8. A pad according to claim 6, in which there are six such slots spaced around the periphery of the pad.
- A pad according to claim 6, in which there are eight such slots spaced around the periphery
 of the pad.
 - 10. A pad according to claim 9, in which alternate slots extend further towards the centre of the pad.
- 11. A pad according to any one of claims 6 to90 10, in which the slots are flared at their open ends.
 - 12. A pad according to claim 11, in which the slots each have an inner part with substantially parallel sides or sides converging in a direction away from the centre of the pad towards the open end of the slot, and an outer part with straight sides diverging in that direction.
 - An interfacing pad according to any preceding claim, provided with an adhesive backing.
 - 14. An interfacing pad according to claim 13, in which the adhesive is protected by a peelable cover.
- 15. An interfacing pad for application to the
 working surface of a tool for grinding, lapping or polishing optical lenses, to adjust the effective curvature of the tool, substantially as described herein with reference to Figures 1 to 5, or to
 Figures 1 to 5 modified in accordance with Figure
 10 6 or 7 of the accompanying drawings.
- 16. An assembly comprising a grinding, lapping or polishing tool provided with an interfacing pad as claimed in any preceding claim, there being a grinding, lapping or polishing pad or
 115 foil laid on and conforming to the upper surface of the interfacing pad.

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June 19, 2004

Mrs. Stephanie K. Wade DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP 2101 L Street NW Washington, DC 20037-1526 United States of America

Vía e-mail, fax & courier Fax: (202) 785 9700 E-mail: wades@dsmo.com Tel.: (202) 887 0689

Re.: Invoices pending of payment by Falconi Puig Abogados

Dear Stephanie:

According with the above reference mater, and once we have verified your statement of account, please be informed of the following:

- 1. Check enclose. To this communication we are enclosing Pacific National Bank check number 1253 for the amount of US\$ 1775,08 which pays your invoices numbers: 2078498 for US \$ 126.54; 2092669 for US \$ 162.00; 2088002 for US \$ 552.54; 2092670 for US \$ 504.00; 2097040 for US \$ 150.00; y, 2094974 for US \$ 280.00
- 2. Invoice 2043672. We do not have it registered for the total amount, we have registered the invoice with US\$ 288.00, US \$ 551.00 y, US \$ 180.00. We have not accounted the amount of US\$ 755.15 because we do not have the invoice that supports it. Please forward us a certified copy by fax and mail.

From invoice number 2043672 we have paid already US\$ 839, correspondent to US\$ 288,00 and US\$ 551,00.

By our letter dated march 21, 2003 addressed to the attention of Mister Donald Gregory and sent by certified mail, we enclosed check number 1122 for the total amount of 791.50 in payment of US\$ 288,00 of invoice 2043672 and US\$ 503.50 of invoice number 2060600.

By our letter dated may 22, 2003 addressed to the attention of Mister Donald Gregory and sent by certified mail, we enclosed checks numbers 1151 and 1268 for the total amount of 1662.80 and 185.20 respectively, in payment of invoices numbers 2051177, 2051176, 2043672 (US\$ 551.00), 2040681, and 2038776. Please find enclose copies of such letters and checks.

3. Your invoices numbers 2098759 for US\$ 340.47 and 2098758 for US \$ 704.10, have just been
Sent to the clients for payment. We will insist in order to pay as soon as possible.

FALCONI PUIG

- 4. We are conducting a personal lawyer-client contact so that we can obtain the payment of the other invoices. We are insisting and we hope we can send another check next week. We are very much looking forward to pay everything as soon as possible.
- 5. Finally, please, we insist in our request, in relation with your invoices. Each invoice has to be issued individually for each client and each case. Our accounting system does not permit to register the same number of invoice for several cases of one client and even worst for cases of different clients. We have been doing efforts to process your invoices with many problems of information in our system.

Alvaro Iturralde Finantial Chief

aiturralde@falconipuig.com

ecilia Felconi

Parkner

cfalconi@falconipuig.com

ADM/lawyers Enclosures: mentioned



May 22, 2003

Doctor
Donald A. Gregory
DICKSTEIN, SHAPIRO, MORIN & OSHINSKY LLP
2101 L Street, N.W.
Washington D.C. 20037
United States of America

Via World Mail Tel: (1)(202) 785-9700 Vax: (1)(202) 887-0689

Ref: Invoice payments

Dear Dr. Gregory:

According to the above referenced matter, please be informed that attached to this letter you will find the checks N° 1151 for the amount of US\$ 1.662.80 and N° 1268 for the amount of US\$ 185.20 which pays the following invoices:

| CLIENTE | FACT. CORR. | FECHA | VALOR |
|------------------------------|-------------|-------------|----------|
| COMPAÑÍA DE CERVEZAS | 2051177 | novi 14, 02 | 76,80 |
| COMPAÑÍA DE CERVEZAS | 2051176 | sept 02, 02 | 110.00 |
| INTERNATIONAL INTERTRADE SER | 2043672 | ener 28, 02 | 551.00 |
| INTERNATIONAL INTERTRADE SER | 2040681 | ener 28, 02 | 925.00 |
| | | SUMAN | 1,662,80 |

| CLIENTE | FACT. CORR. | FECHA | VALOR |
|--------------------------------|-------------|-------------|--------|
| NICHOLAS PIRAMAL INDIA LIMITED | 2038776 | octu 25, 01 | 185.20 |
| | | SUMAN | 185.20 |

In case you need any additional information, do not hesitate to contact us.

Best regards,

Dra. Cécilia Palconi Pérez administracion@falconipuig.com

Ana R.

| 1/2004 11:35 FAX 59322504790 | FALCONI PUIG ABOGADOS |
|--|--|
| MIGUEL FALCONI PUIG | 1151 63-1135 / 660 |
| SOLO DEPOSITO CUENTA BENEFICIARIO ONOS DEPOSIT DI NERCORDO DI ACCOUNTI | MAY 22, 2003 |
| PAY TO THE DICKSTEIN SHAPIRO MORI | N \$1.662,80 |
| ONE THOUSAND SIX HUNDRI PACIFIC NATIONAL BANK —— MEMBER FOIC 1390 BRICKELL AVENUE MIAMI, FLORIDA 33131-3324 | ED SIXTY TWO 80/100 DOLLARS |
| FOR | 190#06 1151 |
| FP&A SERVICIOS LEGALES S.A. SOLO DEPOSITO CUENTA RENERICIA FIO SOLO DEPOSITO CUENTA RENERICA F | 1268 63-1135/660 re MAY 22, 2003 |
| PAY TO THE DICKSTEIN SHAPIRO MORIN | |
| | HTY FIVE 20/100 DOLLARS |

#066011350# 3

1248624006 1268



March 21, 2003

Doctor
Ponald A. Gregory
DICKSTEIN, SHAPIRO, MORIN & OSHINSKY LLP
2101 I. Street, N.W.
Washington D.C. 20037
United States of America

Vía World Mail Tel: (1)(202) 785-9700 Fax: (1)(202) 887-0689

Ref: Invoice payments

Dear Dr. Gregory:

According to the above referenced matter, please be informed that attached to this letter you will find the check N° 1133 for the amount of US\$ 791,50, which pays the following invoices:

| Client | Invoice N° | Date | Amount |
|--------------------------------|------------|--------------|--------|
| Compañia de Flaborados el Café | 2043672 | Nov 19, 2002 | 288,00 |
| Compañia de Elaborados el Café | 2060600 | Jan 15, 2003 | 503,50 |
| | | Total | 791,50 |

in case you need any additional information, do not hesitate to contact us.

Best regards,

Algrandia Lara Cobo g dministrative Chief

administracion@falconipuig.com

Alfonso P.

MIGUEL FALCONI PUIG

SOLO DEPOSITO CUENTA MENERICIARIO
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63-1135 / 660

DATE MARCH 20 2003

PAY TO THE ONDER OF DICKSTEIN SHAPIRO

SEVEN HUNDRED NINETY ONE 50/100

PACIFIC NATIONAL BANK
MEMBER FOIC
1390 BRICKELL'AVENUE
MIAMI, FLORIDA 33131-3324

FOR

1:06601135 / 660

Calto- Ecuadi Tel.: (593-2) 2: 4-18